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RAILROAD NOISE EMISSION STANDARDS

ENVIRONMENTAL PROTECTION AGENCY

[40 CFR Part 201]

RAILROAD NOISE

Proposed Emission Standards

Pursuant to section 17 of the Noise Control Act of 1972, Public Law 92–574 (86 Stat. 1234), the Administrator of the Environmental Protection Agency proposes to establish a new part 201 of Title 40 of the Code of Federal Regulations establishing noise emission regulations for surface carriers engaged in interstate commerce by railroad.

I. BASIS OF THE PROPOSED REGULATIONS

A. *Statutory authority.* In section 2 of the Noise Control Act, Congress expressed its judgment "that, while primary responsibility for control of noise rests with State and local governments, Federal action is essential to deal with major noise sources in commerce control of which requires national uniformity of treatment." As a part of this essential Federal action, section 17 requires the Administrator to publish proposed noise emission regulations which "shall include noise emission standards setting such limits on noise emission resulting from operation of the equipment and facilities of surface carriers engaged in interstate commerce by railroad which reflect the degree of noise reduction achievable through the application of the best available technology, taking into account the cost of compliance." After the effective date of a regulation under section 17, applicable to noise emissions resulting from the operation of any equipment or facility of a surface carrier engaged in interstate commerce by railroad, no State or political subdivision thereof may adopt or enforce any standard applicable to noise emissions resulting from the operation of the same equipment or facility of such carrier unless such standard is identical to a standard applicable to noise emissions resulting from such operation prescribed by these regulations. The Administrator, after consultation with the Secretary of Transportation may, however, determine that the State or local standard, control, license, regulation, or restriction is necessitated by special local conditions and is not in conflict with regulations promulgated under section 17. Procedures for State and local governments to apply under section 17(c)(2) of the Act will be published by this Agency concurrent with, or shortly after, promulgation of final section 17 regulations.

These sections of the Noise Control Act reflect the desire of Congress to protect both the environment and commerce through the establishment of uniform national noise emission regulations for the operation of interstate railroad equipment and facilities which require national uniformity of treatment in order to facilitate interstate commerce. Such treatment is requisite for those types of interstate railroad equipment and facilities whose operation would be burdened by conflicting State and local noise controls. Preemption under section 17 occurs only for State or local noise regulations on equipment and facilities on which Federal regulations are in effect. Section V of this preamble discusses the preemptive effect of these proposed regulations in greater detail.

Where national uniformity of treatment is not needed, Congress recognizes the primary responsibility of State and local governments to protect the environment from noise. State and local regulations on noise emissions resulting from the operation of equipment and facilities of surface carriers engaged in interstate commerce by railroad, which are not preempted by applicable Federal regulations under section 17, are subject to the Commerce Clause of the U.S. Constitution. Under that Clause, any State or local regulations which constitute an undue burden on interstate commerce are invalid.

B. *Statutory requirements for the proposed regulation.* Federal regulations on interstate railroad equipment and facilities under section 17 are to include noise emission standards setting such limits on noise emissions resulting from their operation which reflect the degree of noise reduction achievable through the application of the best available technology, taking into account the cost of compliance. Based upon the strict language of the Noise Control Act, its legislative history, and other relevant data, these requirements can be further clarified as follows:

"Best available technology" is that noise abatement technology available for application to equipment and facilities of surface carriers engaged in interstate commerce by railroad which produces meaningful reduction in the noise produced by such equipment and facilities. "Available" is further defined to include:

1. Technology which has been demonstrated and is currently known to be feasible.

2. Technology for which there will be a production capacity to produce the estimated number of parts required in reasonable time to allow for distribution and installation prior to the effective date of the regulation.

3. Technology that is compatible with all safety regulations and takes into account operational considerations including maintenance, and other pollution control equipment.

"Cost of compliance" is the cost of identifying what action must be taken to meet the specified noise emission level, the cost of taking that action, and any additional cost of operation and maintenance caused by that action.

Regulations under section 17 are to be promulgated only after consultation with the Secretary of Transportation in order to insure appropriate consideration for safety and technological availability; and are to take effect after such period as the Administrator finds necessary, after consultation with the Secretary of Transportation, to permit the development and application of the requisite technology, giving appropriate consideration to the cost of compliance within such period. Final regulations are to be promulgated within 90 days after publication of the proposed regulations and may be revised from time to time in accordance with subsection 17(a)(2) of the Noise Control Act. These regulations under section 17 of the Noise Control Act shall be in addition to any regulations that may be proposed under section 6 of the Act.

Section 17(b) of the Noise Control Act requires the Secretary of Transportation, after consultation with the Administrator, to promulgate regulations to insure compliance with all standards promulgated by the Administrator under section 17. The Secretary of Transportation shall carry out such regulations through the use of his powers and duties of enforcement and inspection authorized by the Safety Appliance Act, the Interstate Commerce Act, and the Department of Transportation Act. Regulations promulgated under section 17 shall be subject to the provisions of sections 10, 11, 12 and 16 of the Noise Control Act.

II. DEVELOPMENT OF THE PROPOSED REGULATIONS

A. *General.* In order to develop regulations which fulfill these criteria, the Administrator undertook a study of railroad noise. On February 1, 1973, an advanced notice of proposed rule making on interstate rail carrier noise emission standards was published in the FEDERAL REGISTER soliciting public comment (38 FR 3086, February 1, 1973). The docket established as a result of this action is maintained at the EPA headquarters, 4th & M Streets SW., Washington, D.C. 20460, and also at the EPA Regional Headquarters at 17355 Baltimore Avenue, Kansas City, Missouri 46189, and 100 California Street, San Francisco, California 94111. A task force of Federal, State and local government representatives was convened to develop recommendations to EPA for the scope and content of Federal interstate railroad noise emission regulations. The information prepared for the EPA's 1971 Report to the President and Congress on Noise was reviewed. EPA staff, task force, and consultants gathered and analyzed technical information from other sources, and additional data was acquired in areas where there was little or no existing information. All of this information, which is summarized briefly below, is open for public inspection at the Office of Noise Abatement and Control of EPA, Room 1108, Crystal Mall, Building No. 2, 1921 Jefferson Davis Highway, Arlington, Virginia. A Background Document/Environmental Explanation giving a more detailed explanation of the technical basis for the regulations is available from the Office of Public Affairs, Environmental Protection Agency, 401 M Street SW., Washington, D.C. 20460.

B. *Types of equipment and facilities of interstate railroads considered for regulation.* Many railroad noise problems

can best be controlled by measures which do not require national uniformity of treatment to facilitate interstate commerce at this time. The network of railroad operations is imbedded into every corner of the country, including rights-of-way, spurs, stations, terminals, sidings, marshaling yards, maintenance shops, etc. Protection of the environment for such a complex and pervasive industry is not simply a problem of modifying noisy equipment, but get down into the minutiae of countless daily railroad operations at thousands of locations across the country. The environmental impact of a given railroad operation will vary depending on whether it takes place, for example, in a desert or adjacent to a residential area. For this reason, EPA believes that State and local authorities are better suited than the Federal government to consider fine details such as the addition of sound insulation or noise barriers to particular facilities, or the location of noisy railroad equipment within those facilities as far as possible from noise-sensitive areas, etc. There is no indication, at present, that differences in requirements for such measures from place to place impose any significant burden upon interstate commerce. At this time, therefore, it appears that national uniformity of treatment of such measures is not needed to facilitate interstate commerce and would not be in the best interest of environmental protection.

The national effort to control noise has only just begun, however; and it is inevitable that some presently unknown problems will come to light as the effort progresses. Experience may teach that there are better approaches to some aspects of the problem than those which now appear most desirable. The situation may change so as to call for a different approach. Section 17 of the Noise Control Act clearly gives the Administrator of the Environmental Protection Agency authority to set noise emission standards on the operation of all types of equipment and facilities of interstate railroads. If in the future it appears that a different approach is called for, either in regulating more equipment and facilities, or fewer, or regulating them in a different way or with different standards consistent with the criteria set forth in section 17, these regulations will be revised accordingly.

The Administrator has considered the following broad categories of railroad noise sources in order to identify those types of equipment and facilities which require national uniformity of treatment through Federal noise regulations to facilitate interstate commerce:

1. *Office buildings.* Many, if not all, surface carriers engaged in interstate commerce by railroad own and operate office buildings. These buildings are technically "facilities" of the carriers. Like all office buildings, they may emit noise from their air conditioning and mechanical equipment. But since each building is permanently located in only one jurisdiction and is potentially subject only to its regulations, it is not affected in any significant way by the fact that different jurisdictions may impose different standards on noise emissions from the air conditioning and mechanical equipment of other buildings. At this time, there appears to be no need for national uniformity of treatment of these facilities, and they are therefore not covered by these proposed regulations.

2. *Repair and maintenance shops.* Railroad repair and maintenance shops are similar in many ways to many non-railroad industrial facilities such as machine shops, foundries, and forges. All such facilities can reduce their noise impact on the surrounding community by a variety of measures including reduction of noise emissions at the source, providing better sound insulation for their buildings, erecting noise barriers, buying more land to act as noise buffer, scheduling noisy operations at times when their impact will be least severe, or simply moving noisy equipment to locations more remote from adjoining property. Such detailed and highly localized environmental considerations are best handled by local authorities. Like office buildings, shops are permanently located in only one jurisdiction and thus are not potentially subject to differing or conflicting noise regulations of other jurisdictions. At this time, therefore, there appears to be no need for national uniformity of treatment of these facilities, and they are not covered by these proposed regulations.

At times, railroad maintenance shops may contain major noise sources which do require national uniformity of treatment, such as locomotives. But the fact that some such individual noise sources within a shop may be subject to Federal noise emission regulations is irrelevant to the validity of State or local noise emission regulations applied to the shop as a whole, as long as the State or local regulation on the shop can reasonably be complied with without physically affecting the Federally regulated noise source within the shop (for example, by installing sound insulation in the shop building). This will be discussed further in the section on preemption below.

3. *Terminals, marshaling yards, humping yards.* Like office buildings and shops, railroad terminals and yards are permanent installations which are normally subject to the environmental noise regulations of only one jurisdiction. Noise emissions from terminals and yards can also be reduced by many measures that do not require national uniformity of treatment, and that can best be handled by local environmental authorities. These include measures such as building noise barriers around noise sources such as retarders, acquiring land to act as a noise buffer, locating noisy equipment as far as possible from adjacent noise-sensitive property, and reducing the volume of loudspeaker systems or replacing them with two-way radios. At this time, there appears to be no need for national uniformity of treatment of these facilities; and they are not covered by the proposed regulations.

Some noise sources in railroad yards may at some point require national uniformity of treatment through Federal noise regulations, even though such sources may be permanently physically located in a yard. Such a circumstance could be occasioned because of the noise sources' intimate relationship to the movement of railroad trains. Rail car retarding operations in humping and marshaling yards, for example, produce individual peak noise levels of up to 120 dB(A) at 100 feet. Such retarding operations are an integral part of the movement of railroad trains. The Background Document to these proposed regulations discusses a number of measures now being investigated which may make it technologically and economically feasible to control this noise at its source, i.e., the retarder. Such measures include lubrication of retarder beams, changes in the composition or design of the beams, and changes in the method of application of retarding force. At this time, however, it is the Agency's position that retarder noise is an element of fixed facility railroad yard noise which, as such, can best be controlled by measures which do not in themselves affect the movement of trains and therefore do not require national uniformity of treatment. Such noise control measures might include, for example, the erection of noise barriers. The Agency's study of railroad yard noise indicates that concern for noise from railroad yards is more local than national. This is due in large part to the location of a number of yards in non-urban areas and the relatively small number of hump yards. Accordingly, the establishment of a uniform national standard could potentially incur significant costs to the railroads with only limited environmental impact resulting in terms of population relief from undesirable noise levels. However, because of the high levels of noise emitted from rail car retarding operations the Agency solicits in particular public comment on the desirability of a Federally preemptive national standard for noise emitted as a result of rail car wheels passing through active and/or inert retarders during humping or marshaling yard operations.

Like railroad maintenance shops, marshaling and humping yards contain some noise sources which are covered by the proposed regulation. As will be discussed further in the section on preemption below, a State or local noise regulation on a railroad terminal or yard is, in effect, a regulation on the Federally regulated noise sources within the terminal or yard only when compliance could be achieved, as a practical matter, solely by physically altering the Federally regulated noise sources.

4. *Track and right-of-way.* Due to the intimate relationship between the track and the rail car wheels in the generation of rail car noise, the proposed regulations preempt State and local regulations specific to track.

However, some steps can be taken to reduce noise emissions from railroad rights-of-way which do not in any way affect the operation of trains on the rights-of-way, such as the erection of noise barriers. State and local governments are much better situated than the Federal Government to determine if some noise-sensitive areas need such protection; and the existence of differing requirements for such measures in different areas does not, at this time, appear to impose any significant burden on interstate commerce. There is, at present, no need for national uniformity of treatment of such noise abatement techniques; and they are, therefore, not covered by the proposed regulations.

5. *Horns, whistles, bells, and other warning devices.* These noises are different in nature from most other types of railroad noise, since they are created intentionally to convey information to the hearer instead of as an unwanted by-product of some other activity. They are closely related to safety considerations and are already regulated for safety reasons at the Federal and State levels. They are, therefore, not covered by these proposed regulations. The EPA will continue its effort in assessing the impacts of various railroad signal and warning devices to provide future improvements and regulations for noise to impacted areas. Under Section IV of the Noise Control Act, EPA will coordinate these efforts with other appropriate responsible agencies.

6. *Special purpose equipment.* Interstate rail carriers operate a number of types of special purpose rail cars, including snow plows, track laying equipment, and cranes. It is not clear to EPA at this time whether such equipment is used in such a manner as to require national uniformity of treatment; or, if such treatment is requisite, what noise emission standards should be applied to its operation. In any event, there does not appear to be any conflicting State or local regulations on such equipment at present. Accordingly, such special purpose equipment which may be located on or operated from rail cars is not covered by the proposed standards. However, the rail cars themselves on which such special purpose equipment is located or operated from are included under the proposed standards for rail car operations. If in the future it appears that national uniformity of treatment of such equipment is necessary, appropriate noise emission standards for it pursuant to section 17 will be proposed.

7. *Trains.* Unlike the categories of railroad equipment and facilities discussed above, train noise is potentially subject to the noise regulations of more than one jurisdiction. Trains are constantly moving from one jurisdiction to another; and they could not practically be stopped at every political boundary and adapted to meet a different noise standard. Moreover, they constitute a major source of noise to people close to railroad rights-of-way. The various sources of train noise are therefore, covered by these proposed regulations in order to facilitate interstate commerce through national uniformity of treatment of their control.

III. Noise From the Operation of Trains

A. *General.* The study of railroad noise by EPA has identified the basic types of train noise as locomotive noise, wheel noise, coupler interaction, other miscellaneous structural vibrations, and refrigerator car cooling system noise. Locomotive noise, at 86 to 98 dB(A) when measured at 30 meters (100 feet), (see Background Document/Environmental Explanation) clearly dominates the other sources of noise when the locomotive is passing any given point. After the locomotive has passed, however, the other types of train noise, though normally indistinguishable from each other, combine to produce noise levels from 70 to 93 dB(A) (depending on speed) when measured at 30 meters (100 feet). (These figures, which are from the studies undertaken in the course of development of these proposed regulations, differ somewhat from those in the EPA 1971 Report to the President and Congress on Noise; because the latter were based upon much more limited data which was measured at 50 feet from the trains, instead of 100 feet.)

Consistent with these findings, these regulations set separate standards on locomotive noise and the other types of train noise, which are referred to inclusively by the term "railroad car noise." This approach is also necessitated by the fact that locomotives are sometimes operated without any cars attached, and trains often contain more than one locomotive. A standard applicable to the train as a whole might not apply to a locomotive operated by itself and could not simply take into account the variation in noise levels produced by the use of two or more locomotives. (Theoretically, two identical noise sources operated together generate approximately 3 dB(A) more than either of the noise sources operated singly. However, this does not necessarily hold true of locomotives.)

B. *Locomotive noise.* Locomotives may be grouped into four broad categories according to the type of power they use: steam, diesel-electric, all-electric, and gas turbine. The few remaining steam locomotives in the United States are preserved primarily as historical curiosities and are, therefore, not covered by these regulations.

1. *Diesel-electric locomotives.* Diesel-electric locomotives are by far the most important type in the United States today, with approximately 27,000 in service. They are powered by diesel engines which drive electric alternators, which in turn produce electrical energy to run traction motors attached to each axle of the locomotives. Their engine/alternator speed and power output is controlled by throttles which, on all present models, have eight possible settings from idle to full power. They are of two types: "switcher locomotives," which are usually less than 1500 horsepower and are used primarily for moving cars within railroad yards, and "road locomotives," which are more than 1500 horsepower and are used primarily for long haul trains. Both types of locomotives can be and are used for either type of service when necessary.

Noise sources on diesel-electric locomotives are the engine exhaust, cooling fans, engine casing, engine air intake, traction motor blowers, the traction motors themselves, and the wheels. Of these, only the engine casing (typically emitting 80 to 85 dB(A) at 30 meters) (100 feet), cooling fans (80 to 93 dB(A) at 30 meters) (100 feet) generate noise levels high enough to be distinguishable from the other sources, so that the characteristic sound of a diesel-electric locomotive is the loud, low-frequency rumble of the exhaust. At the present time, very few, if any, diesel-electric locomotives in regular service in the United States are equipped with any device designed to reduce exhaust noise. EPA has studied the feasibility of such devices, however, and it appears that the same technological principles which are used to muffle the exhausts of most other internal combustion engines can be applied to locomotive diesel engine exhausts without serious difficulty. In fact, prior to 1960 most switcher locomotives were equipped with exhaust mufflers. The mufflers were replaced after that time with sparks arresters, designed to reduce fire hazard along railroad rights-of-way. New mufflers designed for retrofit application to the existing diesel-electric locomotive fleet will have to incorporate spark arresters or be capable of being used with them, and (at least for road locomotives) provide adequate clearance for tunnels, bridges, and other obstructions. These requirements do not appear to present serious problems. (See the Background Document.)

The cost of installing exhaust mufflers on the existing locomotive fleet is dependent upon four factors: the cost of the mufflers themselves (about $200 to $500 for switcher locomotives and about $1500 for road locomotives), the cost of additional hardware (no cost for switcher locomotives, and $200 to $2,500 for road locomotives), the cost of labor to install mufflers (about $50 for switchers and $200 to $1100 for road locomotives, depending upon model), and lost revenue for the time the locomotives are out of service to have mufflers installed (about 1 day for switchers and 1 to 3 days, depending upon model, for road locomotives). The last factor is significant because there is not enough excess capacity in the railroad system for any locomotive to be taken out of service for any period without having an effect on the amount of freight and passengers hauled. It can be reduced or eliminated, however, by scheduling muffler installation at times when the locomotives are out of service for normal maintenance anyway. These considerations are further detailed in the Background Document.

Mufflers can reduce diesel-electric locomotive exhaust noise by approximately 10 dB(A), which reduces exhaust noise to approximately the level of the cooling fans and engine casing noise emission sources. With a proper muffler application, the overall noise emitted by a locomotive under stationary test would not exceed a level of 87 dB(A) when it is operated at full throttle and 67 dB(A) at idle, when measured at 30 meters (100 feet). Further reduction of overall locomotive noise would require modifications to the cooling fans and engine casing. Available knowledge, at this time, indicates that the further reduction possible with available technology, taking into account the cost of compliance, would be negligible. (See Background Document.)

The proposed regulations, therefore, require diesel-electric locomotives to eventually meet a noise emission standard which is possible for them to meet through the installation of exhaust mufflers. A period of four years is allowed for locomotives to meet that standard, based upon an allowance of two years for the design of locomotive mufflers and the development of adequate production facilities for them, and two years after that for the actual installation of mufflers on the existing locomotive fleet. EPA data detailed in the Background Document for these proposed regulations indicates that mufflers can be designed, produced, and installed on the locomotive fleet within this time period at a cost of approximately $80 to $100 million, amounting to 1.6 percent to 2.0 percent of net railroad revenue or 0.3 percent to 0.4 percent of gross revenue.

In the meantime, an interim standard on diesel-electric locomotive noise emissions is proposed to be effective 270 days after promulgation of these regulations. Since it is based upon the noise level which well-maintained diesel-electric locomotives produce at present, this interim standard will require the railroads only to prevent their locomotives from becoming noisier than they already are, through adequate maintenance, etc., pending the application of mufflers. At that same time, the standard will preempt State and local governments from adopting or enforcing possibly conflicting regulations on diesel-electric locomotives. (See Preemption section below).

Noise emission standards are specified at idle and for all power settings of diesel-electric locomotives to insure that mufflers which are effective at all power settings will be installed rather than mufflers which would be effective only at a particular power setting.

2. *Gas turbine locomotives.* There are, at present, only a very few gas turbine locomotives in service in the U.S., and they are being used primarily for experimental and demonstration purposes. The most significant such project currently is the "turbotrain" operating between New York and Boston. Depending on the outcome of such projects, however, gas turbine locomotives could become an important part of the locomotive fleet in the future. The data that is available indicates that turbine powered locomotives can comply with the proposed standards. Due to limited data on noise emissions, separate standards for those gas turbines are not included in the present proposed regulation. The proposed standards are, however, applicable to these locomotives.

3. *All-electric locomotives.* All-electric locomotives are of much less importance to the U.S. railroad system than diesel-electric locomotives. There are approximately 250 all-electric locomotives in service, used primarily in the Northeast.

All-electric locomotives are inherently quieter than diesel-electric locomotives, since they do not contain diesel engines. Due to limited data on noise emissions from all-electric locomotives, separate standards for those locomotives are not included in the present proposed regulation. The proposed standards are, however, applicable to these locomotives.

C. *Railroad car noise.* The wheel noise, coupler interaction, and other structural vibration that make up train noise after the locomotive has passed are normally indistinguishable from each other. They make up a total noise level that can range from 70 to 93 dB(A) when measured at 30 meters (100 feet) for properly maintained railroad cars.

Inadequate maintenance, however, may significantly raise the level of one of these types of train noise and cause it to dominate the others. Flat spots on wheels, for example, may emit impulsive noise of over 93 dB(A) at 30 meters (100 feet). The proposed railroad car noise emission standard is designed to insure that railroad cars will be properly maintained so that train noise levels will be as low as the available technology permits.

Current technology for reducing moving railcar noise emissions was evaluated and will continue to be evaluated for new technology applications. There are efforts underway, for example, to reduce wheel rail noise from rapid transit systems which may have application to rail freight systems in the future. At this time, however, railroad maintenance practices of grinding car wheels and rails in addition to the use of welded rail appear to be the principal currently available methods for reducing moving rail car noise emissions. Of these maintenance practices, wheel and rail-grinding is currently specified under Federal Railroad Safety Regulations. Continuing to meet this requirement would impose no additional cost to the railroads.

Improvements in maintenance practices to reduce noise emissions from rail cars is an area EPA will be carefully evaluating. An example of improved maintenance practices might be the reduction in the size of wheel flat allowed to reduce noise emissions from that particular source. If subsequent studies indicate a reduction of noise emission is justified from a technology and cost standpoint, a smaller wheel flat requirement would be considered in the revision of the Federal Rail Carrier Noise Emission Standard. Similarly, if improved rail-grinding maintenance or increased frequency of rail-grinding is shown to be a significant tool in reducing rail car noise emissions, such measures would be considered when revising these regulations. Due to the intimate relationship between rail car wheels and the rail itself in the generation of "rail car noise," it is necessary that the proposed standard on rail car noise preempt any State or local standard specific to the rail.

The Department of Transportation is currently sponsoring research on wheel/rail noise. Whenever technology developed in this or other programs makes possible a reduction in railroad car noise, these regulations may be revised to require its application to interstate railroads in accordance with subsection 17(a)(2) of the Noise Control Act.

Refrigerator car cooling system noise is not distinguished from other railroad car noise in the proposed regulation because it is not normally distinguishable in the presence of other moving railroad car noise. It is significant, with levels as high as 75 dB(A) at 15 meters (50 feet), when refrigerator cars are parked with their cooling systems running as they often are in marshaling and humping yards, but it causes noise problems only in places where refrigerator cars are parked near noise-sensitive areas. At this time, such localized problems can best be controlled as a part of railroad yard noise control, through measures such as parking refrigerator cars away from noise-sensitive areas or installing noise barriers, rather than by requiring modifications to the refrigeration equipment of the entire refrigerator car fleet. Since refrigerator cars are covered by the proposed railroad car noise emission standard, State and local governments will be preempted by it from adopting or enforcing any different standard on refrigerator car noise emissions. The proposed standard will in no way, however, interfere with the ability of State and local governments to enact or enforce noise emission regulations on railroad yards that require railroads to relocate parked refrigerator cars or erect noise barriers. (See the section on preemption below.)

IV. Summary of the Proposed Regulations

The proposed regulations will establish standards for noise emissions resulting from the operation of locomotives and railroad cars of surface carriers engaged in interstate commerce by railroad. The proposed standard specifies sound levels measured at a distance of 30 meters (100 feet) from the centerline of the track on which the locomotive or railroad car being measured is located, and is specified in decibels on the A-weighted scale using fast meter response. The general measurement procedure used to obtain the data upon which the standards are based is presented in more detail in the Background Document/Environmental Explanation.

The measurement methodology described in the Background Document/Environmental Explanation provides for a complete definition of the noise emission standard but is not intended to be the only measurement method applicable for enforcement purposes. Enforcement may be conducted with procedures which are similar to those used, provided that the actual noise emission level allowed is equivalent to that specified in these regulations.

The Department of Transportation is to develop and, after consultation with the Administrator, promulgate regulations to insure compliance with these standards.

A. *Locomotive standard.* All locomotives to which this regulation is applicable are to meet the following noise emission standards under stationary test conditions:

(1) Effective 270 days from the date of promulgation of these regulations locomotives tested singularly shall not exceed 93 dB(A) at any throttle setting and 73 dB(A) at idle when measured at 30 meters (100 feet) over any surface.

(2) Effective 4 years from the date of promulgation of these regulations locomotives tested singularly shall not exceed 87 dB(A) at any throttle setting and 67 dB(A) at idle when measured at 30 meters (100 feet) over any surface.

Similarly, all locomotives or combination of locomotives to which this regulation is applicable, are to meet the following noise emission standards under moving conditions:

(1) Effective 270 days from the date of promulgation of these regulations, 96 dB(A) when moving at any time under any condition of grade, load, acceleration, or deceleration as measured over any surface at 30 meters (100 feet).

(2) Effective 4 years from the date of promulgation of these regulations, 90 dB(A) when moving at any time under any condition of grade, load, acceleration, or deceleration as measured over any surface at 30 meters (100 feet).

B. *Railroad car standard.* Effective 270 days from the date of promulgation of these regulations, all railroad cars or combination of railroad cars operated by surface carriers engaged in interstate commerce by railroad are to meet a noise emission standard of 88 dB(A) at speeds up to and including 72 km/hr (45 mph) and 93 dB(A) at speeds greater than 72 km/hr (45 mph) when measured at 30 meters (100 feet) over any surface.

V. Preemption

Under subsection 17(c)(1) of the Noise Control Act, after the effective date of these regulations, no State or political subdivision thereof may adopt or enforce any standard applicable to noise emissions resuling from the operation of locomotives, or railroad cars of surface carriers engaged in interstate commerce by railroad unless such standard is identical to the standard prescribed by these regulations. Subsection 17(c)(2), however, provides that this section does not diminish or enhance the rights of any State or political subdivision thereof to establish and enforce standards or controls on levels of environmental noise, or to control, license, regulate, or restrict the use, operation or movement of any train if the Administrator, after consultation with the Secretary of Transportation, determines that such standard, control, license, regulation, or restriction is necessitated by special local conditions and is not in conflict with regulations promulgated under Section 17.

Conversely, subsection 17(c)(1) does not in any way preempt State or local standards applicable to noise emissions resulting from the operation of any equipment or facility of interstate railroads which is not covered by Federal regulations. Thus, under the proposed regulations the States and localities will remain free to enact and enforce noise regulations on railroad equipment and facilities other than trains without any special determination by the Administrator. Only after a Federal regulation on noise emissions resulting from the operation of a particular type of railroad equipment or facility has become effective must the States and localities obtain a special determination by the Administrator under subsection 17(c)(2) in order to adopt or enforce their own use restrictions or environmental noise limits on that equipment or facility.

Some types of railroad facilities on which no Federal noise standards or regulations have become effective, and which may, therefore, be subjected to State and local noise standards without any special determination by the Administrator, may contain other types of equipment or facilities which are covered by preemptive Federal regulations. Railroad maintenance shops, for example, may from time to time emit the noise of locomotives undergoing tests along with noises common to many industrial operations such as forging and grinding; and railroad marshaling and humping yards include locomotives among their many types of noise sources.

In most instances, State or local standards on non-Federally regulated equipment or facilities of railroads can be complied with without affecting the Federally regulated equipment within them. Standards on noise emissions from repair shops, for example, can be met by many measures including improved sound insulation in the walls of the shop, buffer zones of land between the shop and noise-impacted areas, and scheduling the operation of the shop to reduce noise at those times of the day when its impact is most severe. Standards on railroad marshaling and humping yards can be met by a variety of steps including: reducing the volume of loudspeaker systems by using a distributed sound system or replacing speakers with two-way radios, reducing noise emissions from equipment which is not covered by Federal regulations, installing noise barriers around retarders and noisy equipment, acquiring additional land to act as a noise buffer, and locating noisy equipment such as parked refrigerator cars or idling locomotives as far as possible from adjacent noise-sensitive property. State or local regulations on noise emissions from railroad facilities which the railroad can meet by initiating measures such as these are not standards applicable to noise emissions resulting from the operation of locomotives or railroad cars, and thus would not be preempted by the proposed regulations. No special determination by the Administrator under subsection 17(c)(2) would be necessary. State or local noise standards on facilities involved in interstate commerce such as railroad marshaling yards are, of course, subject to Constitutional prohibition if they are so stringent as to place an undue burden on interstate commerce.

In some cases, however, a State or local noise regulation which is not stated as a regulation applicable to a Federally regulated type of equipment or facility may be such a regulation in effect, if the only way the regulation could be met would be to modify the equipment which meets the Federal regulation applicable to it. This would be the case if, for example, after the proposed regulations become effective, a State or locality attempted to adopt or enforce a limit on noise emissions from railroad rights-of-way in urban areas which could not reasonably be met by measures such as noise barriers. Such regulation would, in effect, require modifications to trains even though they met the Federal regulations and would, thus, be a regulation applicable to trains which would be preempted under subsection 17(c)(1). The same would be true of any State or local standard on railroad yards which could not reasonably be met except by modifying locomotives or railroad cars which comply with the proposed Federal standards.

State or local use or operation regulations which are applicable to noise emissions resulting from the operation of Federally regulated equipment and facilities can, of course, stand if the Administrator makes the determinations specified in subsection 17(c)(2) regarding them.

State or local noise emission standards which are directly applicable to noise emissions resulting from the operation of Federally regulated equipment and facilities may stand without any special determination by the Administrator if those regulations are identical to the Federal regulations. By adopting such identical regulations, States and their political subdivisions can add their enforcement capability to that of the Department of Transportation. The Environmental Protection Agency recommends and encourages such adoption of regulations identical to the Federal regulations and their enforcement by State and local authorities.

VI. Impact of Proposed Regulations

A. *Economic.* The total net cost to the railroad industry for compliance with the proposed railroad noise emission standard has been estimated at 83 to 103 million dollars. This cost estimate includes

direct retrofit cost, loss of revenue due to retrofit down-time, and the reduction in railroad operating costs as a result of retrofit down-time. There is no significant increase in operational or maintenance cost expected. Mufflers are to be designed for the life of the locomotive so no replacement cost is projected.

A separate analysis of the bankrupt Class I railroads (railroads having annual operating revenues of 5 million dollars or more) was also undertaken. These included the Boston and Maine, Central Railroad of New Jersey, Erie Lackawanna, Lehigh Valley, Penn Central Transportation Company, Ann Arbor and the Reading Company, all of which are located in the Northeast region of the United States. These 7 railroads operate about 20 percent of the locomotives owned by Class I railroads in the United States. The total cost of retrofit for these roads would be 16 to 20 million dollars or about 20 percent of the total cost of the muffler retrofit program.

The bankrupt roads are not currently generating sufficient revenues to cover operating expenses. These regulations would increase their annual operating expenses for each of the two years in the compliance period by, at most, 0.6 percent. As such, they represent a marginal additional burden on those roads. It is the opinion of the Administrator that these additional costs are reasonable and constitute the application of the "best available technology, taking into account cost of compliance."

In any case, the concern for the impact of noise regulations on the bankrupt Northeast railroads may be rendered moot by the passage of the Regional Rail Reorganization Act of 1973. This Act is intended to bring about the restructuring of the bankrupt Northeast railroads into one, economically viable rail system for that region. When this goal is achieved the impact of these regulations on the Northeast rail system will be no different from its impact elsewhere.

B. *Noise reduction impact.* The impact of the proposed regulations on noise can be expressed as a reduction in the number of people subjected to a specific decibel level as a train passes by. The number of people impacted depends upon the penetration of the noise into the community and the number of people in close proximity to railroad lines. To investigate this impact, the Agency selected 10 cities with widely varying populations to make comparisons of population densities and types of land use adjacent to the railroad systems. Combining these results with national average train traffic data, and the estimated length of railroad right-of-way in urban areas, predictions of noise reduction impact were made. It was estimated that there are one million people in the United States exposed to peak overall railroad sound levels of 80 dB(A) or greater. Compliance with the standards established in the proposed regulation is estimated to reduce the population exposed to peak overall railroad sound levels of 80 dB(A) or greater by one-half or 500 thousand people. The remaining 500 thousand people will have their present exposure reduced by up to 6 dB(A).

Although the number of people exposed to railroad noise in the United States is relatively small, the proposed regulation would result in a significant reduction in noise exposure for that portion of the population that is impacted.

VII. Intent of Future Regulations

In addition to the continued acquisition of noise emission data and assessment of noise reduction technology, the Agency intends to carefully consider the establishment of separate noise emission standards for different classes of locomotives. Based on present data, this is not possible; however, there is an indication that certain locomotives may lend themselves to increased noise reduction. That is, the rootes blown aspirated locomotives may be able to be quieted significantly more than the turbocharger aspirated locomotives. Additional data on both present noise levels and abatement technology are required to further assess this issue. Further, locomotive noise measurements at various throttle settings recording both the db(A) level and the dB(C) level are being obtained. This will permit evaluation of low frequency exhaust noise levels.

VIII. Background Document and Environmental Explanation for the Proposed Interstate Rail Carrier Noise Emission Regulations

On June 14, 1973, the Agency published procedures designed to insure that when certain major standards, regulations, or guidelines are proposed an explanation of their basis, purpose, and environmental effects be made available to the public (38 FR 15653). The procedures are applicable to major standards, regulations, and guidelines which are proposed on or after December 31, 1973, and which prescribe national standards of environmental quality or require national emission effluent or performance standards and limitations.

The Agency determined to implement these procedures in order to insure that the public was apprised of the environmental effects of these major standard setting actions and was provided detailed background information to assist in commenting on the merits of the proposed actions. In brief, the procedures call for the Agency to make public the information available to it delineating the major environmental effects of the proposed action, to discuss the pertinent non-environmental factors affecting the decision, and to explain the viable options available to the Agency and the reasons for the options selected.

The procedures contemplate publication of this information in the Federal Register where this is practicable. They provide, however, that where, because of the length of these materials such publication is impracticable, the material may be made available in an alternate format.

The Document which is entitled "Background Document and Environmental Explanation for the Proposed Interstate Rail Carrier Noise Emission Regulations" is quite lengthy, and it would be impracticable to publish it in its entirety in the Federal Register. Copies may be obtained from the Office of Public Affairs, Room 329–C, Waterside Mall, 4th and M Streets SW., Washington, D.C. 20460. To the extent possible, significant aspects of the material have been presented in summary form in the foregoing preamble. As was indicated earlier in the preamble, this Document is available to all interested parties. To allow those interested to determine whether they desire to request a copy the following are the topics contained in the Document:

1. Statutory basis and regulatory procedure;
2. Data base for the regulations;
3. Background of the railroad industry;
4. Sources of railroad noise and consideration for Federal regulations;
5. Enforcement considerations;
6. Economic impact of proposed regulations;
7. Environmental impact of proposed regulations; and
8. Discussion of regulatory alternatives.

IX. Public Comment

Section 17 of the Noise Control Act of 1972 requires that final regulations be promulgated not later than 90 days after the date of publication of proposed regulations, and after consultation with the Secretary of Transportation. Interested persons may submit information, statistics, and comments in writing with 5 copies to:

Office of Noise Abatement and Control (HM–571), Attention: Docket No. ONAC 7201002, Environmental Protection Agency, Washington, D.C. 20460.

Those contributors to the docket who choose to hand carry their submittals should deliver their comments to:

Office of Noise Abatement and Control (HM–571), Room 1108, Crystal Mall, Building No. 2, 1921 Jefferson Davis Highway, Arlington, Va. 20460.

The Environmental Protection Agency will consider all comments on the proposed noise emission standards for surface carriers engaged in interstate commerce by railroad which are received at the Agency within 45 calendar days from the date of this notice.

All comments will be available for public inspection during normal working hours (8 a.m. to 4:30 p.m.) at the Office of Public Affairs, Room 329–C, Waterside Mall, 4th and M Streets SW., Washington, D.C. 20460, at the Office of Public Affairs, 1735 Baltimore Avenue, Kansas City, Missouri 64108, and at the Office of Public Affairs, 100 California Street, San Francisco, California 94111.

Final regulations will be published reflecting modifications as the Administrator deems appropriate after consideration of public comment and consultation with the Secretary of Transportation.

JOHN QUARLES,
Acting Administrator.

JUNE 24, 1974.

Part 201 of title 40 is proposed to read as follows:

PART 201—RAILROAD NOISE EMISSION STANDARDS

Subpart A—General Provisions

Sec.
201.1 Definitions.

Subpart B—Interstate Rail Carrier Operations Standards

201.10 Applicability.
201.11 Standard for locomotive operation under stationary condition.
201.12 Standard for locomotive operation under moving condition.
201.13 Standard for rail car operations.

AUTHORITY: Sec. 17(a), 86 Stat. 1248, 42 U.S.C. 4917(a).

Subpart A—General Provisions

§ 201.1 Definitions.

As used in this part, all terms not defined herein shall have the meaning given them in the Act:

(a) "Act" means the Noise Control Act of 1972 (P.L. 92-574, 86 Stat. 1234).

(b) "Carrier" means a common carrier by railroad, or partly by railroad and partly by water, within the continental U.S., subject to the Interstate Commerce Act, as amended, excluding street, suburban, and inter-urban electric railways unless operated as a part of a general railroad system of transportation.

(c) "dB(A)" means the standard abbreviation for A-weighted sound level in decibels.

(d) "Fast meter response" means that the dynamic response of the sound level meter shall comply with the meter dynamic characteristics in paragraph 5.3 of the American National Standard Specification for Sound Level Meters, ANS S1.4-1971. These publications are available from the American National Standards Institute, Inc., 1430 Broadway, New York, New York 10018.

(e) "Idle" means that condition of locomotive operation at lowest practicable engine speed whereby the source of motive power is disengaged from the system which translates the power to the wheels.

(f) "Interstate Commerce" means the commerce between any place in a state and any place in another state, or between places in the same state through another state, whether such commerce moves wholly by rail or partly by rail and partly by motor carrier, express, water or air.

(g) "Load Cell" means a device external to the locomotive, of high electrical resistance, used in locomotive testing to simulate engine loading while the locomotive is stationary. (Electrical energy produced by the diesel generator is dissipated in the load cell resistors instead of the traction motors.)

(h) "Locomotive" means, for the purpose of this regulation, a self-propelled vehicle designed for and used on railroad tracks in the transport of rail cars.

(i) "Person" means any individual, firm, co-partnership, corporation, company, association, or joint stock association and includes any trustee, received assignee or personal representative thereof.

(j) "Rail Car" means a non-self-propelled vehicle designed for and used on railroad tracks.

(k) "Railroad" means all the roads in use by any common carrier operating a railroad, whether owned or operated under a contract, agreement, or lease.

(l) "Self load" means that condition of a locomotive in which the locomotive diesel powered generators are supplying electrical power directly to the dynamic brake load grids.

(m) "Retarder" means a mechanical braking device used in the classification of railroad cars to control the velocity of the cars during the assembly of trains.

(n) "Sound level" means the quantity in decibels measured by a sound level meter satisfying the requirements of American National Standard Specification for Sound Level Meters S1.4-1971. This publication is available from the American National Standards Institute, Inc., 1430 Broadway, New York, New York 10018.

(o) "Sound pressure level" means in decibels, 20 times the logarithm to the base ten of the ratio of a sound pressure to the reference sound pressure of 20 micropascals (20 micronewtons per square meter). In the absence of any modifier, the level is understood to be that of a root-mean-square pressure.

(p) "Warning device" means sound emitting devices used to alert and warn people of the presence of railroad equipment.

Subpart B—Interstate Rail Carrier Operations Standards

§ 201.10 Applicability.

The provisions of this subpart apply to all rail cars and all locomotives, except steam locomotives, operated or controlled by carriers as defined in Subpart A. They apply to the total sound level emitted by rail cars and locomotives operated under the conditions specified. These provisions do not apply to the sound emitted by a warning device, such as a horn, whistle or bell. They do not apply to special purpose equipment which may be located on or operated from railcars, such as: track laying equipment, cranes, rotary or fixed snow plows, or pile drivers; intraurban mass transit systems unless operated as a part of a general railroad system of transportation; or to railroad yards, shops, rights-of-way, or any other railroad equipment and facilities not specified herein.

§ 201.11 Standard for locomotive operation under stationary condition.

No rail carrier subject to these regulations shall operate any locomotive to which this regulation is applicable which produces sound levels in excess of the following noise emission standards:

(a) Effective 270 days from the date of promulgation of these regulations, 93 dB(A) at any throttle setting except idle, and 73 dB(A) at idle, when operated singly, connected to a load cell, through the locomotive self load, or the equivalent thereof, when measured over any surface with fast meter response at 30 meters (100 feet) from the geometric center of the locomotive and perpendicular to the centerline of the track.

(b) Effective 4 years from the date of promulgation of these regulations, 87 dB(A) at any throttle setting except idle, and 67 dB(A) at idle, when operated singly connected to a load cell, through the locomotive self load, or the equivalent thereof, when measured over any surface with fast meter response at 30 meters (100 feet) from the geometric center of the locomotive and perpendicular to the centerline of the track.

§ 201.12 Standard for locomotive operation under moving condition.

No rail carrier subject to these regulations shall operate any locomotive or combination of locomotives to which this regulation is applicable which produces sound levels in excess of the following noise emission standards:

(a) Effective 270 days from the date of promulgation of these regulations, 96 dB (A) when moving at any time or under any condition of grade, load, acceleration, or deceleration, when measured over any surface with fast meter response at 30 meters (100 feet) from the centerline of any section of track which exhibits less than a two (2) degree curve [or a radius of curvature greater than 873 meters (2,865 feet)].

(b) Effective 4 years from the date of promulgation of these regulations, 90 dB(A) when moving at any time or under any condition of grade, load, acceleration, or deceleration, when measured over any surface with fast meter response at 30 meters (100 feet) from the centerline of any section of track which exhibits less than a two (2) degree curve [or a radius of curvature greater than 873 meters (2,865 feet)].

§ 201.13 Standard for rail car operations.

Effective 270 days from the date of promulgation of these regulations no carrier shall operate any rail car or combination of rail cars whose movement produces noise levels in excess of 88 dB (A) when measured over any surface with fast meter response at 30 meters (100 feet) from the centerline of the track at rail car speeds up to and including 72 km/hr (45 mph); or 93 dB(A) measured over any surface with fast meter response at 30 meters (100 feet) from the centerline of the track at rail car speeds greater than 72 km/hr (45 mph).

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